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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,963	09/15/2006	Hans Adams	VKSWP0102US	2661
23908 7590 04/20/2010 RENNER OTTO BOISSELLE & SKLAR, LLP 1621 EUCLID AVENUE NINETEENTH FLOOR CLEVELAND, OH 44115				
EXAMINER				
MAL TIEN HUNG				
ART UNIT		PAPER NUMBER		
2836				
MAIL DATE		DELIVERY MODE		
04/20/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/598,963

**Applicant(s)**

ADAMS ET AL.

**Examiner**

TIEN MAI

**Art Unit**

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI.08)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/05/2010 has been entered. Upon entering amendment, claims 1-3, 5 and 6 have been amended; claims 7-9 have been added.

### ***Response to Arguments***

2. Applicant's arguments filed 02/05/2010 have been fully considered but they are not persuasive for the reason discussed below.

3. Applicant argues that claim 1 has been amended into a Jepson-type form. However, the claim has not met the requirement for the Jepson-type format. See MPEP 2129.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Takizawa et al. (US 4,998,177, "Takizawa").

6. **Regarding claim 6**, Takizawa discloses electromagnetic solenoid drive apparatus, the apparatus (fig. 1) comprising:

a coil (22) supplied by a voltage source (1),

a voltage-dependent resistor (23, 24, 28 and 30) provided between the voltage source and the coil, and

an auxiliary voltage source (27) connected in parallel to the coil, the voltage of said auxiliary voltage source being opposite to that of said voltage source in reversal voltage event,

wherein the voltage-dependent resistor includes a plurality of electronic switches (28 and 30) connected in series in the form of a cascade, said electronic switches each bridging a series resistor (23 and 24) and being driven into the closing state when an input voltage applied by said voltage source falls below a given switching voltage (when the voltage source is below 12 volts), and wherein each electronic switch is switches by an auxiliary transistor (10 and 17) (col. 4, line 56 - col. 5, line 2).

7. **Regarding claim 9**, Takizawa discloses that the switching voltage is determined by a reference voltage path (5) when switch 4 is closed.

#### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of Yiannoulos (US 4,705,322, "Yiannoulos").

Takizawa discloses the limitations as discussed above. Takizawa does not explicitly disclose the auxiliary voltage source comprising a Zener diode and the auxiliary voltage source connected in series with a rectifier diode. Rather, Takizawa discloses the auxiliary voltage source is a rectifier diode (27). Yiannoulos discloses in fig. 2 that adding a Zener diode (20) to an existing rectifier diode (14) (as shown in fig. 1) to improve the speed of the switching action of the circuit (col. 3, lines 48-62). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Takizawa and add a Zener diode, as taught by Yiannoulos, in order to improve the speed of the switching action of the circuit (col. 3, lines 48-62).

10. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of Howell (US 5,164,872, "Howell").

11. **Regarding claim 1**, Takizawa discloses electromagnetic solenoid drive apparatus, the apparatus (fig. 1) comprising:

a coil (22) supplied by a voltage source (1),

a voltage-dependent resistor (23, 24, 28 and 30) provided between the voltage source and the coil, and

an auxiliary voltage source (27) connected in parallel to the coil, the voltage of said auxiliary voltage source being opposite to that of said voltage source in reversal voltage event,

wherein the voltage-dependent resistor includes a plurality of electronic switches (28 and 30) connected in series in the form of a cascade, said electronic switches each bridging a series resistor (23 and 24) and being driven into the closing state when an input voltage applied by said voltage source falls below a given switching voltage (when the voltage source is below 12 volts) (col. 4, line 56 - col. 5, line 2).

Takizawa does not explicitly disclose the electronic switches are driven simultaneously into the closing state. Howell discloses a voltage-dependent resistor including a plurality of electronic switches (30 and 70) connected in series in the form of a cascade, said the electronic switches bridging a voltage-dependent device (42), wherein the electronic switches are driven simultaneously into closing state by a control circuit (36) via signal line (38) (see fig. 5). However, Takizawa's solution works properly only with DC power supply. If the solenoid requires AC power supply Takizawa's solution should be modified with Howell's solution which capable of driving AC current. In the Howell's circuit, the combination of two electronic switches (30 and 70 in fig. 5) can efficiently control the AC current while both electronic switches are driven by the same control signal (38). When the circuit of Takizawa may be modified by replacing each one of driving transistor (28 and 30) directionally switch according to Howell. In the obtained circuit each of the electronic switches of Howell bridging a series resistor. It would have been obvious to one of ordinary skill in the art at the time of the invention

was made to modify the solenoid drive circuit of Takizawa because suggested of modification of Takizawa according to Howell will allow driving the solenoid by AC current when the solenoid require AC current.

12. **Regarding claim 5**, Takizawa discloses that the switching voltage is determined by a reference voltage path (5) when switch 4 is closed.

13. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of Howell as applied to claim 1 above, and further in view of Yiannoulos.

Takizawa and Howell disclose the limitations as discussed above. Neither Takizawa nor Howell explicitly discloses the auxiliary voltage source comprising a Zener diode and the auxiliary voltage source connected in series with a rectifier diode. Rather, Takizawa discloses the auxiliary voltage source is a rectifier diode (27). Yiannoulos discloses in fig. 2 that adding a Zener diode (20) to an existing rectifier diode (14) (as shown in fig. 1) to improve the speed of the switching action of the circuit (col. 3, lines 48-62). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Takizawa in view of Howell and add a Zener diode, as taught by Yiannoulos, in order to improve the speed of the switching action of the circuit (col. 3, lines 48-62).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIEN MAI whose telephone number is 571-270-1277. The examiner can normally be reached on M-Th: 8:00-7:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached on 571-272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Tien Mai/  
Examiner, Art Unit 2836  
04/14/2010

/Stephen W Jackson/  
Primary Examiner, Art Unit 2836